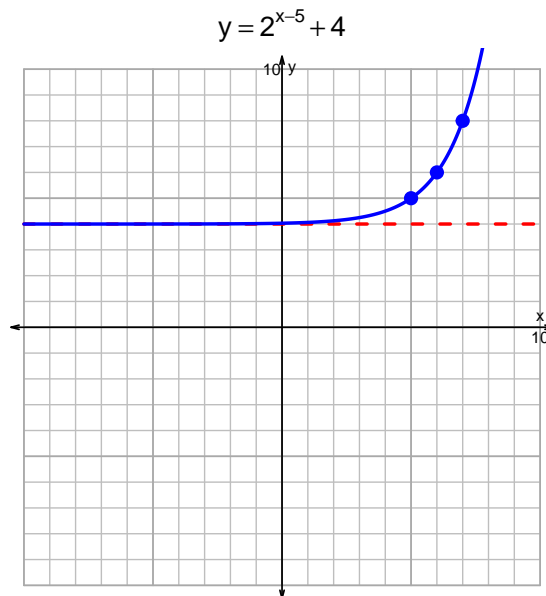
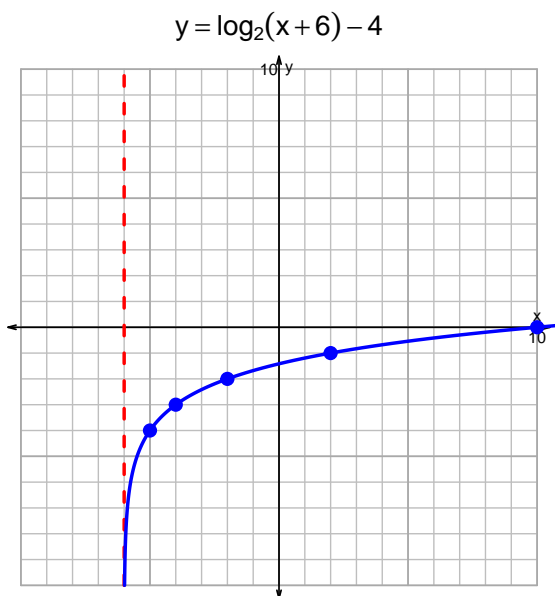


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v326)

1. (10 pts) Graph  $y = \log_2(x + 6) - 4$  and  $y = 2^{x-5} + 4$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$19 = \left(\frac{3}{5}\right) \cdot 2^{4t/7}$$

Divide both sides by  $\frac{3}{5}$ .

$$\frac{19 \cdot 5}{3} = 2^{4t/7}$$

Take log, base 2, of both sides.

$$\log_2 \left( \frac{19 \cdot 5}{3} \right) = \frac{4t}{7}$$

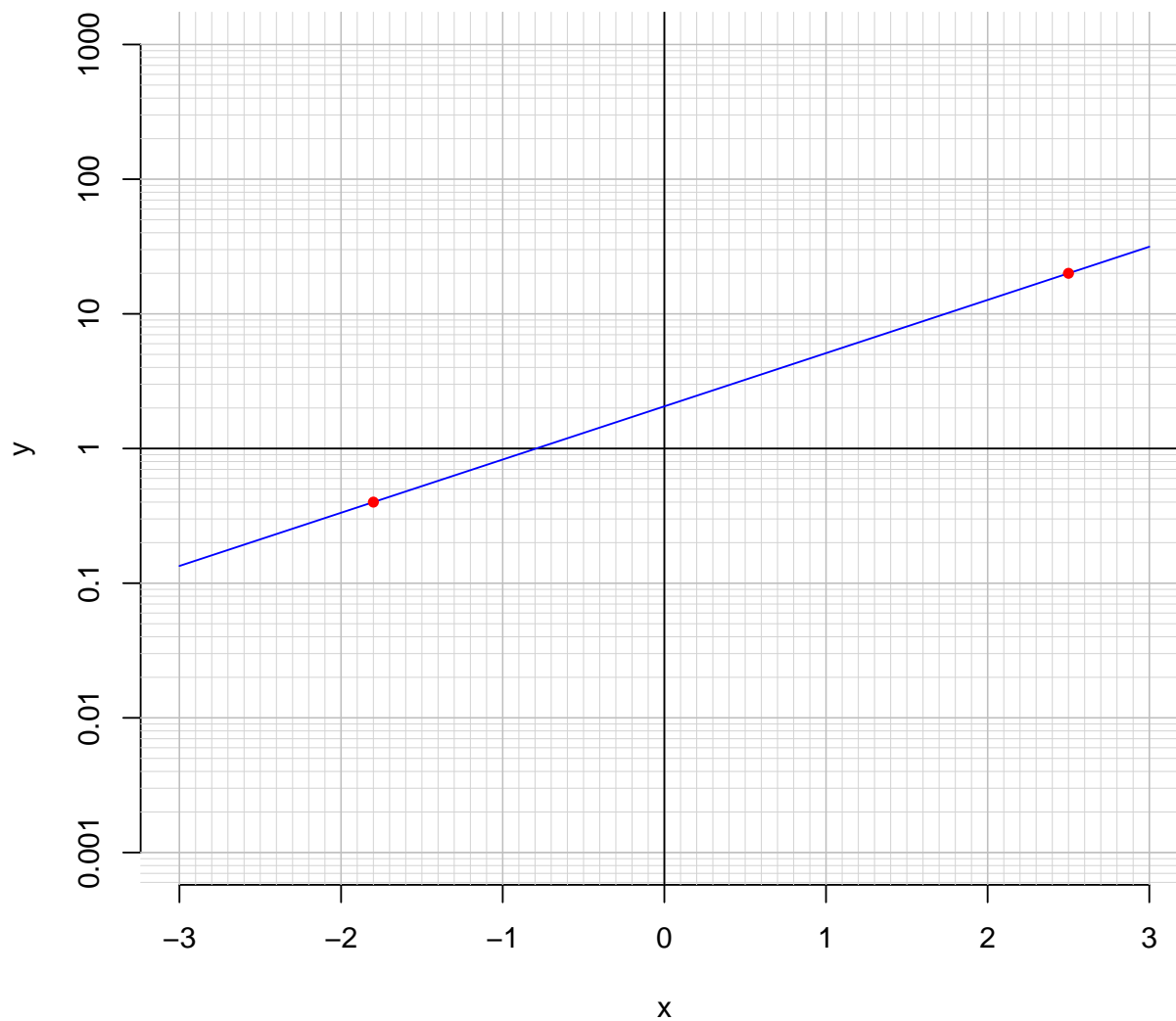
Divide both sides by  $\frac{4}{7}$ .

$$\frac{7}{4} \cdot \log_2 \left( \frac{19 \cdot 5}{3} \right) = t$$

Switch sides.

$$t = \frac{7}{4} \cdot \log_2 \left( \frac{19 \cdot 5}{3} \right)$$

3. (10 pts) An exponential function  $f(x) = 2.06 \cdot e^{0.91x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(2.5)$ .

$$f(2.5) = 20$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{0.91} \cdot \ln\left(\frac{x}{2.06}\right)$$

Using the plot above, evaluate  $f^{-1}(0.4)$ .

$$f^{-1}(0.4) = -1.8$$